

CLAIMS

What is claimed is:

1. A fluid purification system comprising:
 - a semiconductor having an outer surface on which is formed a light-emitting diode producing ultraviolet light;
 - a first layer disposed on the outer surface, the first layer transmitting the ultraviolet light produced by the light-emitting diode; and
 - a photocatalyst disposed on the first layer, the photocatalyst producing a photocatalytic oxidation process when the ultraviolet light is transmitted from the light-emitting diode to the photocatalyst.
2. The fluid purification system of claim 1 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.
3. The fluid purification system of claim 1 wherein the photocatalyst is disposed within a fluid stream.
4. The fluid purification system of claim 3 wherein the photocatalyst is disposed within an air stream in an air handling system.
5. The fluid purification system of claim 1 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.

6. The fluid purification system of claim 1 wherein the first layer is one of glass, plastic or quartz.

7. A fluid purification system comprising:
 - a semiconductor having an outer surface on which is formed a light-emitting diode producing ultraviolet light;
 - a fluid disposed immediately adjacent the outer surface of the semiconductor;
 - a first layer disposed outwardly of the fluid and having an inner surface contacting the fluid, the fluid and the first layer transmitting the ultraviolet light produced by the light-emitting diode from an outer surface of the first layer; and
 - a photocatalyst disposed on the outer surface of the first layer, the photocatalyst producing a photocatalytic oxidation process when the ultraviolet light is transmitted from the light-emitting diode to the photocatalyst.
8. The fluid purification system of claim 7 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.
9. The fluid purification system of claim 7 wherein the photocatalyst is disposed within a fluid stream.
10. The fluid purification system of claim 9 wherein the photocatalyst is disposed within an air stream in an air handling system.
11. The fluid purification system of claim 7 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.

12. A fluid purification system comprising:
a semiconductor having an outer surface on which is formed a light-emitting diode producing ultraviolet light; and
a photocatalyst disposed on the outer surface of the first layer, the photocatalyst producing a photocatalytic oxidation process when the ultraviolet light is transmitted from the light-emitting diode to the photocatalyst.
13. The fluid purification system of claim 12 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.
14. The fluid purification system of claim 12 wherein the photocatalyst is disposed within a fluid stream.
15. The fluid purification system of claim 14 wherein the photocatalyst is disposed within an air stream in an air handling system.
16. The fluid purification system of claim 15 wherein the light-emitting diode is one of a plurality of light-emitting diodes adjacent one another.

17. A purification system comprising:
 - a first ultraviolet light source;
 - a second ultraviolet light source;
 - a first photocatalyst positioned between the first ultraviolet light source and the second ultraviolet light source, ultraviolet light from the first ultraviolet light source and the second ultraviolet light source causing photocatalytic oxidation by the first catalyst .
18. The purification system of claim 17 further including a second photocatalyst spaced away from the first photocatalyst, positioned between the first and second ultraviolet light sources, and positioned between the first photocatalyst and the second ultraviolet light source.
19. The purification system of claim 18 wherein a first portion of the ultraviolet light from the first photocatalyst passes through the first photocatalyst onto the second photocatalyst.
20. The purification system of claim 19 wherein a first portion of the ultraviolet light from the second photocatalyst passes through the second photocatalyst onto the first photocatalyst, and wherein the first and second ultraviolet light sources each comprise at least one light-emitting diode.